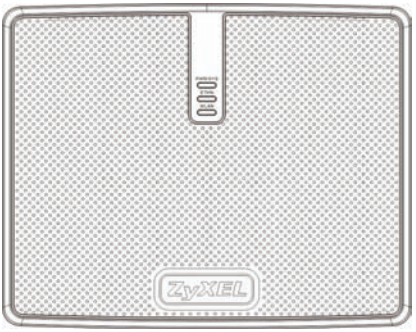
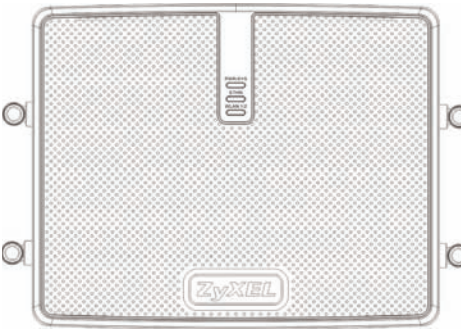
NWA Managed Access Point Series

USER'S GUIDE

NWA5160N 802.11a/g/n Wireless LAN Managed Access Point

NWA5560-N 802.11 a/b/g/n Dual-Radio Managed Access Point





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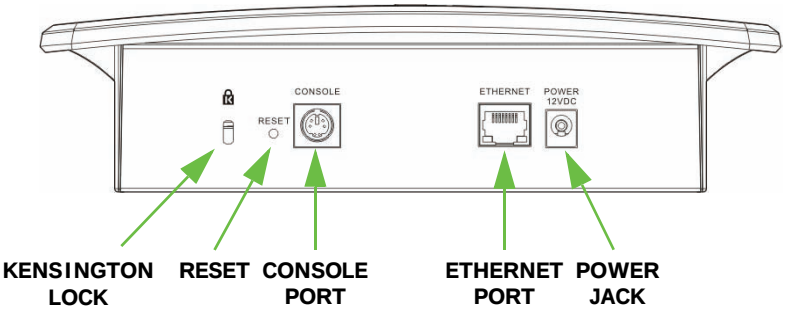
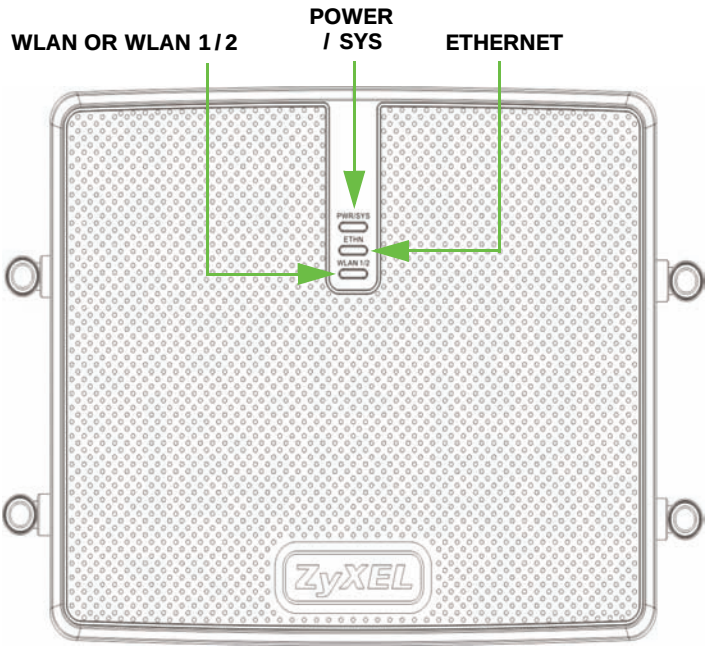
Device Panels





LEDs

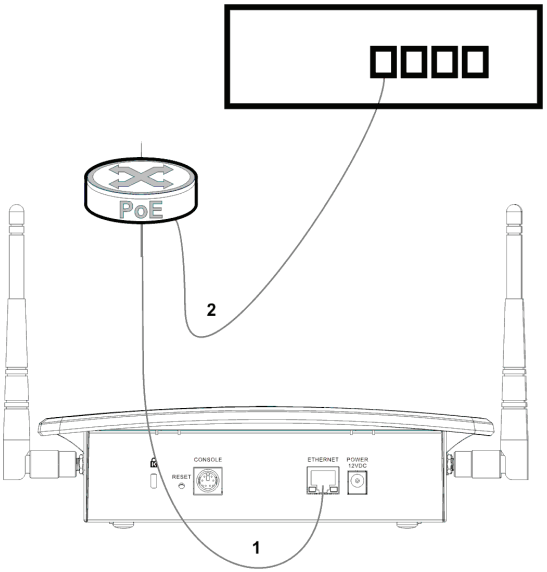
The following table describes your NWA's (Managed Access Point) LEDs.

LED	Color	STATE	DESCRIPTION
Power / Sys	Green	On	The NWA is powered on.
		Off	The NWA is powered off.
	Red	Off	The NWA has succesfully booted.
		Flashing	The NWA has encountered a system failure and cannot boot.
Ethernet	Green	Flashing / On	The NWA has an active 10M/100M connection.
	Yellow	Flashing / On	The NWA has an active 1000M connection.
	Dark		The NWA does not have any active connections.
WLAN	Green	On	The NWA's wireless module is active.
		Off	The NWA's wireless module is inactive or disconnected from the network.
		Flashing	The NWA is transmitting and receiving data to and from wireless clients.

Hardware Connections

The following shows you how to make the NWA's hardware connections. The NWA5560-N is shown in these example figures.

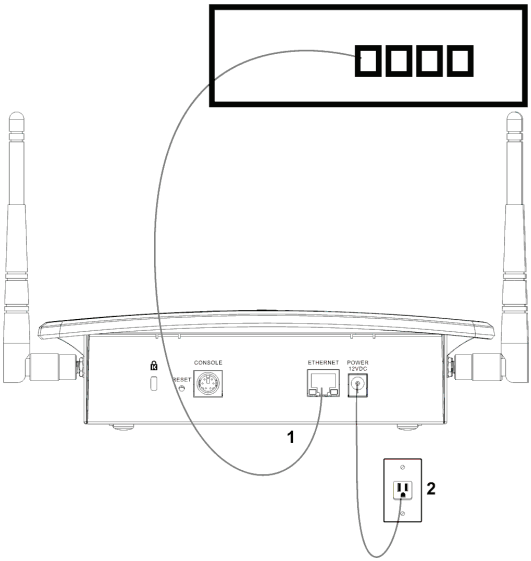
With PoE



1. Connect the NWA to a PoE device with an 8-pin CAT5e cable.

2. Connect the PoE device to an upstream switch or directly to the NXC-5200 Wireless LAN Controller.

Without PoE



1. Connect the NWA to to an upstream switch or directly to the NXC-5200 Wireless LAN Controller.

2. Connect the NWA to an appropriate power outlet and turn on the power.

Console Port Configuration

The NWA is pre-configured, but you may use the console port to manually configure the NWA if necessary. Connect a PS-2 console cable from the console port on your computer to the console port on your NWA. Run a terminal emulation program such as HyperTerminal, with the following settings:

- Speed 115,200 bits per second
- 8 data bits, no parity, 1 stop bit
- No flow control.

Log in using 'admin' and '1234' as the username and password.

```
Welcome to NWA5560-N

Username: admin
Password:
```

NWA IP Address

The NWA is pre-configured to get a dynamic IP address from a DHCP server by default.

Use these commands if you want to give the NWA a fixed IP address.

`Router# configure terminal`	Enter configuration mode
`Router(config)# capwap ap vlan ip address 192.168.1.37 255.255.255.0`	The NWA IP address and subnet mask
`Router(config)# capwap ap vlan ip gateway 192.168.1.32`	The NWA gateway

NWA-NXC Discovery

Use the AP Controller (NXC5200) to remotely manage the NWAs in your network. If the NXC and NWA are in the same network, then the NWA can find the NXC automatically by broadcasting.

If the NWA and NXC are not in the same network, you must configure the NWA to find the NXC in one of two ways:

Static Discovery

Manually enter the IP address of the NXC on the NWA. You can enter up to two IP addresses for the NXC.

```
Router# configure terminal                          Enter configuration mode
Router(config)# capwap ap ac-ip                     These are the NXC IP addresses
192.168.1.1 192.168.1.2
Router(config)# show capwap ap                      Confirm that static discovery is used to find the
discovery-type                                      NXC.
Discovery type : Static AC IP                       AC is the AP Controller, that is, the NXC.
```

Dynamic Discovery via DHCP server

If the NWA gets a dynamic IP address from a DHCP server, you can simultaneously let it get the NXC IP address by configuring it in the DHCP server using DHCP Option 138. You can configure up to two NXC IP addresses on the DHCP server.

Test the Connection

Ping the NXC from the NWA to test the connection.

```
Router# ping 192.168.1.1 (the NXC IP address)
PING 192.168.1.1 (192.168.1.254) 56(84) bytes of data.
```

If it fails, configure the gateway IP address of the NWA.

```
Router# configure terminal
Router(config)# capwap ap vlan ip gateway 192.168.1.32
```

If the NWA and NXC are in a VLAN, configure the VLAN ID (tagged or untagged) using this command:

- capwap ap vlan vlan-id VID { tag | untag } (VID from 1 to 4094)

For example:

```
Router# configure terminal
Router(config)# capwap ap vlan vlan-id 2 tag
```

To see detailed NWA – NXC connection status, use the following command:

```
Router# show capwap ap info
             SM-State                    RUN(8)
         msg-buf-usage                   0/10 (Usage/Max)
        capwap-version                   10118
          Radio Number                   1/4 (Usage/Max)
            BSS Number                   8/8 (Usage/Max)
               IANA ID                   037a
           Description                   AP-0013499999FF
```

Specifications

Specifications are accurate at the time of writing. They apply to all models in the series unless a particlar model is specified.

Feature	Specification
Ethernet Port	10/100/1000 BASE-T RJ-45 (x1)
Console Port	Hardware Console (PS-2)
Antenna	NWA5160N: Three embedded MIMO antennas NWA5560-N:Four external MIMO antennas
Antenna Gain	NWA5160N: 6dBi at 2.4GHz, 5.1dBi at 5.2GHz, 8dBi at 5.8GHz NWA5560-N: 3dBi
Power over Ethernet	NWA5160N: IEEE 802.3af NWA5560-N: IEEE 802.3at and compatible with IEEE 802.3af
Power Requirement	12VDC @ 1.5 A Maximum

Feature	Specification
Temperature	NWA5160N: Operating: 0~40 °C, Storage: -30~60 °C NWA5560-N: Operating: 0~40 °C, Storage: -30~70 °C
Humidity	NWA5160N: Operating: 20~95 °C, Storage: 20~95 °C NWA5560-N: Operating: 10~90 °C, Storage: 10~90 °C
Standards Compliance	IEEE 802.3 & 802.3u 10Base-T & 100Base-TX physical layer specification IEEE 802.3ab (1000BASE-T) IEEE 802.3z (1000Base-SX/ 1000Base-LX) IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.3az (NWA5560-N only)
Management Access	Managed though the NXC5200 Web-based user interface, access over HTTP & HTTPS. CLI access using SSH & console port.
IP & DHCP	Static IP address assignment DHCP client
Data Rate	NWA5160-N: Up to 300 Mbps NWA5560-N: Up to 300 Mbps
2.4 GHz RF Frequency Range	North America: 2.412~2.462 GHz Japan: 2.412 MHz~2.472 GHz Europe ETSI : 2.412-2.472 GHz IEEE 802.11g/n • USA (FCC): 2.422 GHz ~ 2.452 GHz • Europe (ETSI): 2.422 GHz ~ 2.462 GHz • Japan (TELEC) : 2.422 GHz ~ 2.462 GHz
5 GHz RF Frequency Range	North America: 5.15 GHz~5.35 GHz ; 5.47 GHz~5.7 GHz; 5.725 GHz ~ 5.850 GHz Europe ETSI: 5.15 GHz ~ 5.35 GHz ; 5.47 GHz ~ 5.725 GHz Japan: 5.15 GHz ~ 5.35 GHz ; 5.47 GHz ~ 5.725 GHz

Feature	Specification
Output Power	2.4GHz • IEEE 802.11b/g 17dBm max. • IEEE 802.11b/g/n (HT20 only) 17dBm max 5GHz • IEEE 802.11a 18dBm max. • IEEE 802.11a/n HT20 7dBm max • IEEE 802.11a/n HT40 13dBm max
Safety Approvals	European Union • EN 60950-1
EMI Approvals	European Union (CE Mark) • EN 301 489-1 V1.8.1 • EN 301 489-17 V2.1.1 • EN 55022: 2006+A1: 2007, Class B (NWA5160N) • EN 55024: 1998+A1: 2001+A2: 2003 (NWA5160N) North America • FCC Part 15 (Class B) Canada ICES-003 (NWA5160N)
Wireless Approvals	European Union • ETSI EN 300 328 V1.7 • EN 301 893 V1.5.1 North America • FCC Part15C 15.247 • FCC Part 15E Canada • Industry Canada RSS-210 (NWA5160N) Australia (C-Tick) (NWA5160N) • CISPR22 (NWA5160N) Taiwan (DGT) • LP0002
Medical Approvals	European Union • EN 60601-1-2 : 2002

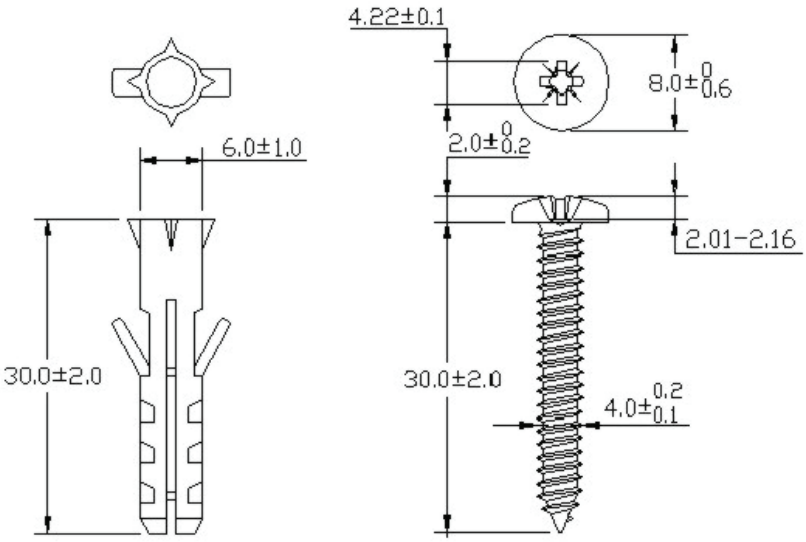
Wall Mounting Instructions

Do not install the NWA in an inverted horizontal position under a desk or tabletop.

To hang your NWA on a wall:

1. Select a position free of obstructions on a sturdy wall.

2. Drill two pilot holes for the screws. Make sure the distance between the centers of the holes and the size of screws match the specifications below.

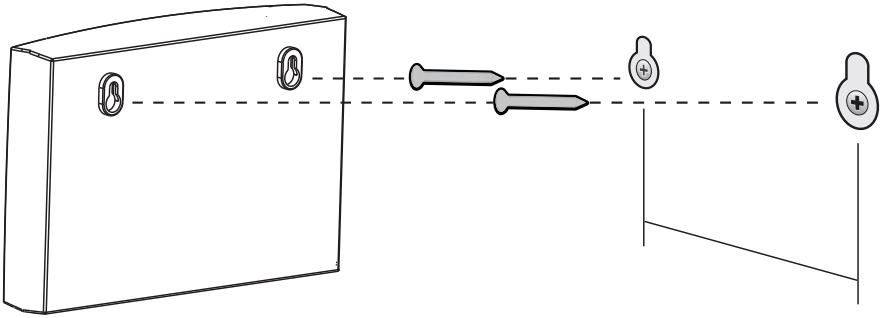


Be careful to avoid damaging pipes or cables located inside the wall when drilling holes for the screws.

3. Do not screw the screws all the way into the wall. Leave a small gap of about 0.5 cm between the heads of the screws and the wall.

4. Make sure the screws are snugly fastened to the wall. They need to hold the weight of the NWA with the connection cables.

5. Align the holes on the back of the NWA with the screws on the wall. Hang the NWA on the screws.



You can also use the optional Ceiling Mounting Kit (sold separately) to mount the NWA on a ceiling instead of a wall.

Legal

Open Source Announcements

This product uses Open Source software. To view the Open Source licenses associated with this product, see the Open Source Announcements appendix in the NXC5200 User's Guide.

Safety Warnings

- Do NOT use this product near water, for example, in a wet basement or near a swimming pool.
- Do NOT expose your device to dampness, dust or corrosive liquids.
- Do NOT store things on the device.
- Do NOT install, use, or service this device during a thunderstorm. There is a remote risk of electric shock from lightning.
- Connect ONLY suitable accessories to the device.
- Do NOT open the device or unit. Opening or removing covers can expose you to dangerous high voltage

points or other risks. ONLY qualified service personnel should service or disassemble this device. Please contact your vendor for further information.

- Make sure to connect the cables to the correct ports.
- Place connecting cables carefully so that no one will step on them or stumble over them.
- Always disconnect all cables from this device before servicing or disassembling.
- Use ONLY an appropriate power adaptor or cord for your device. Connect it to the right supply voltage (for example, 110V AC in North America or 230V AC in Europe).
- Do NOT allow anything to rest on the power adaptor or cord and do NOT place the product where anyone can walk on the power adaptor or cord.
- Do NOT use the device if the power adaptor or cord is damaged as it might cause electrocution.
- If the power adaptor or cord is damaged, remove it from the device and the power source.
- Do NOT attempt to repair the power adaptor or cord. Contact your local vendor to order a new one.
- Do not use the device outside, and make sure all the connections are indoors. There is a remote risk of electric shock from lightning.
- Do NOT obstruct the device ventilation slots, as insufficient airflow may harm your device.
- If you wall mount your device, make sure that no electrical lines, gas or water pipes will be damaged.
- The POE (Power over Ethernet) devices that supply or receive power and their connected Ethernet cables must all be completely indoors.

This product is recyclable. Dispose of it properly.

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Caution:

Any changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user authority to operate the equipment.

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

IMPORTANT NOTE: FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This

equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Operations in the 5.15-5.25GHz band are restricted to indoor usage only.

End Product Labeling

This transmitter module is authorized only for use in devices where the antenna may be installed such that 20 cm may be maintained between the antenna and users (for example access points, routers, wireless ASDL modems, and similar equipment). The final end product must be labeled in a visible area with the following: "Contains TX FCC ID: **I88NWD672NU**"

Manual Information To the End User

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.

注意 !

依據 低功率電波輻射性電機管理辦法
第十二條 經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

第十四條 低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。
前項合法通信，指依電信規定作業之無線電信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

在 5.25GHz-5.35GHz 頻帶內操作之無線資訊傳輸設備，限於室內使用。

ZyXEL Limited Warranty

ZyXEL warrants to the original end user (purchaser) that this product is free from any defects in materials or workmanship for a period of up to two years from the date of purchase. During the warranty period, and upon proof of purchase, should the product have indications of failure due to faulty workmanship and/or materials, ZyXEL will, at its discretion, repair or replace the defective products or components without charge for either parts or labor, and to whatever extent it shall deem necessary to restore the product or components to proper operating condition. Any replacement will consist of a new or re-manufactured functionally equivalent product of equal or higher value, and will be solely at the discretion of ZyXEL. This warranty shall not apply if the product has been modified, misused, tampered with, damaged by an act of God, or subjected to abnormal working conditions.

Note

Repair or replacement, as provided under this warranty, is the exclusive remedy of the purchaser. This warranty is in lieu of all other warranties, express or implied, including any implied warranty of merchantability or fitness for a particular use or purpose. ZyXEL shall in no event be held liable for indirect or consequential damages of any kind to the purchaser.

To obtain the services of this warranty, contact ZyXEL's Service Center for your Return Material Authorization number (RMA). Products must be returned Postage Prepaid. It is recommended that the unit be insured when shipped. Any returned products without proof of purchase or those with an out-dated warranty will be repaired or replaced (at the discretion of ZyXEL) and the customer will be billed for parts and labor. All repaired or replaced products will be shipped by ZyXEL to the corresponding return address, Postage Paid. This warranty gives you specific legal rights, and you may also have other rights that vary from country to country.

Registration

Register your product online to receive e-mail notices of firmware upgrades and information at www.zyxel.com for global products, or at www.us.zyxel.com for North American products.

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